



Centre Number				
71				

Candidate	Number

General Certificate of Secondary Education 2012–2013

Science: Single Award

Unit 2 (Chemistry)
Foundation Tier
[GSS21]

TUESDAY 28 FEBRUARY 2012 11.00 am-12.00 noon



## TIME

1 hour.

## **INSTRUCTIONS TO CANDIDATES**

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.

Write your answers in the spaces provided in this question paper. Answer **all eight** questions.

## INFORMATION FOR CANDIDATES

The total mark for this paper is 60.

Quality of written communication will be assessed in question 8(d). Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question. A Data Leaflet, which includes a Periodic Table of the elements, is provided for your use.

For Exa use	miner's only
Question Number	Marks

1

2

3

4

Total	
Iotai	
Marks	
marko	

## **BLANK PAGE**

1 Stepladders, used by window cleaners, are made of aluminium. © BrandX Pictures / Thinkstock (a) Give three reasons why aluminium is a suitable material for making stepladders. Choose from: conductor : flexible : low density strong : high melting point : 3. \_\_\_\_\_\_[3] (b) Why would it be dangerous if an aluminium ladder touched an overhead electric cable? \_\_\_\_\_[1] 2 (a) Below are the names of four household substances. Examiner Only Using lines, link each substance to the chemical it contains. One has been done for you. Chemical Substance sodium hydrogencarbonate Vinegar magnesium hydroxide Bathroom cleaner ethanoic acid Baking soda ammonia solution Milk of magnesia sodium chloride [3] **(b)** The picture below shows a cylinder of gas. © Crown copyright (i) Name the hazard symbol shown on this cylinder. \_\_\_\_\_[1] (ii) Give two reasons why hazard symbols, rather than words, are placed on some containers. \_ [2]

3 A label from a bottle of soft drink is shown below.

Juice to Go!

Ingredients	
Water	
Sugar	
Citric acid	
Colouring	
Preservative	
Flavouring	

Bursting

with flavour

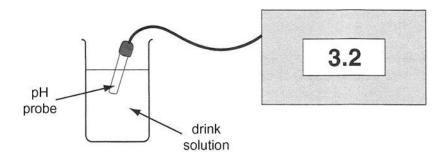
(a) Name the ingredient on the label that gives the drink a low pH value.

\_\_\_\_\_[1]

**(b)** Name a suitable indicator which could be used to find the pH value of this drink.

\_\_\_\_\_[1]

(c) The diagram shows a pH probe.



Give **one** advantage of using a pH probe to measure the pH rather than using a chemical indicator.

\_\_\_\_\_[1]

(d) Complete the following sentence.

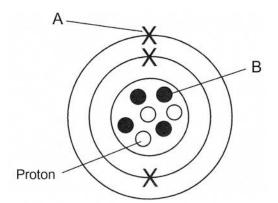
A solution with a pH greater than 7 is described as \_\_\_\_\_\_

[1]

r, glass, metal, textiles and house of the reland 85% of waste goes overed with clay. The rest is received the waste decomposes giving produces foul smelling liquids the supplies.  able below shows the time it take.  Waste item  ininium can	s into landfill sites where it is buried			
Waste item ninium can le core	80–100 years			
ninium can le core	80–100 years	' [		
le core				
ss bottle	500 years			
rspaper	6 weeks			
tic bag	10–20 years			
Plastic bag 10–20 years  Plastic bottle Greater than 500 years				
ving questions. All lie in the will lie in the me.	e landfill site for the longest period of			
(b) Apart from newspapers list all the other materials in the table which should be recycled. Explain fully why you have chosen these materials. List				
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	ame the item which will lie in the me.  part from newspapers list all the hould be recycled. Explain fully naterials.  ist	lame the item which will lie in the landfill site for the longest period of me.  [1]  part from newspapers list all the other materials in the table which hould be recycled. Explain fully why you have chosen these naterials.  ist		

(c)	(i)	Apple cores are described as biodegradable. Explain fully what is meant by the term biodegradable.	Examiner Only  Marks Remark
		[2]	
	(ii)	Suggest another material from the table which could also be biodegradable.	
		[1]	
(d)		art from the time taken to decompose, use the information opposite give <b>two</b> other <b>disadvantages</b> of burying waste in landfill sites.	
	1		
	2	[2]	
(e)	(i)	Calculate the percentage of waste in Northern Ireland that is recycled. (Show your working out.)	
		% [2]	
	(ii)	Give <b>two</b> ways local authorities can encourage people to recycle more waste.	
		1	
		2[2]	

**5** The diagram shows the structure of an atom.



Name the parts labelled A and B on the diagram above.

**6** The fingerprint shown below was found on a stolen black TV set.

7			
			k di
7			

© Astrid & Hanns-Frieder Michler / Science Photo Library

There are four types of fingerprints.

(a) Name the type of fingerprint shown above.

Choose from:

arch	:	whorl	:	loop	:	composite	
							[1 <sup>-</sup>

**(b)** What type of powder would be used to show the fingerprint on the TV set?

\_\_\_\_\_[1]

**(c)** Explain fully how a fingerprint could be obtained from the TV set for evidence use.

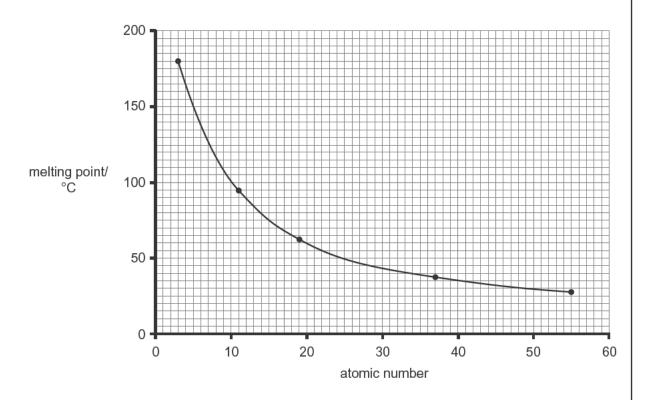
\_\_\_\_\_[3

7 The graph below shows the relationship between the melting point and atomic number of five elements.

Examiner Only

Marks Remark

The five elements are all from the same group of the Periodic Table.



You may find your Data Leaflet helpful to answer the questions below.

(a) (i) What is the atomic number of the element with the highest melting point?

\_\_\_\_[1]

- (ii) Name this element. \_\_\_\_\_\_[1]
- (b) (i) What is the melting point of the element with atomic number 37?

\_\_\_\_\_°C [1]

- (ii) Name this element. \_\_\_\_\_ [1]
- (c) To which group of the Periodic Table do these elements belong?

Group \_\_\_\_\_[1]

			ements called	I
•	melting point an e ling point an eleme	•		
Element	Melting point/ °C	Boiling point/ °C	Mass number	
luorine	-220	-188	19	
Chlorine	-101	-35	36	
Bromine	-7	59	80	
odine	113	183	127	
Name the el	ement in the table	which has the lo	west melting poin	
Name the ha	alogen which is a	<b>liquid</b> at room ter	mperature (20°C)	[1] ). [1]
i) Complete the results.	alogen which is a lead of the following senter	nce to describe a	mperature (20°C) [ trend shown by th	). [1]

8 Mineral water contains many different ions which give it a characteristic taste. The table below gives the information shown on the label of a popular brand of mineral water.

Examiner Only				
Marks Remark				

lons present	Concentration/arbitrary units
Magnesium	18
Potassium	3
Calcium	113
Sodium	17
Chloride	32
Hydrogencarbonate	430
Nitrate	11
Phosphate	1
Sulfate	2

(a) (i)	Using the information in the table, calculate the total concentration
	of the ions causing this mineral water to be hard.
	(Show your working out.)

arbitrary	units	[2]
 arbitiary	armo	[-]

(ii)	Name the ion in the table which would be thermally decomposed
	if the water was boiled.

[1

	Hard water can cause undesirable deposits of calcium carbonate, called 'fur', in kettles.	Examine Marks	r Only Remar
	Complete the word equation to show how the 'fur' forms in kettles.		
	→ calcium carbonate +		
		[3]	
(c)	Explain what is meant by the term <b>hard water</b> .		
		[2]	
(d)	Describe an experiment you could carry out in the laboratory to compare the hardness of bottled water to the hardness of the tap water in your school.  In this question you will be assessed on your written		
	communication skills including the use of specialist terms.		
		_[6]	
(e)	Give <b>one</b> advantage of drinking hard water.		
		ran I I	
		_[1]	

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